

REMARKS

Claims 1, 2 and 5-7 are pending.

Response to Claim Rejections Under § 103

Claims 1, 2 and 5-7 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,387,238 to Merk et al in view of U.S. Patent No. 6,949,178 to Tennakoon et al. Applicants respectfully traverse.

As an initial matter, Applicants note that the Examiner's current position in support of the rejection (i.e., the current collector (136) is a cathode and the electrode catalyst layer (132) fills a space between the current collector ((136) and a membrane (120)) is in conflict with an earlier position as set forth on pages 8 and 9 of the Office Action dated April 17, 2008, namely, that the gas diffusion layer (134) is a cathode and an electrode catalyst layer (132) fills a space between the gas diffusion layer (134) and a membrane (120).

Tennakoon discloses a gas diffusion cathode (130) comprising a gas diffusion layer (134) of carbon cloth or carbon paper fiber that is impregnated with a sintered mass derived from carbon powder, a perfluorinated sulfonic acid polymer, and polytetrafluoroethylene (PTFE) emulsion (132). Preferably, the gas diffusion cathode comprises a polytetrafluoroethylene-bonded, semi-hydrophobic catalyst layer (132) supported on a hydrophobic gas diffusion layer (134). *See, col. 7, lines 20-29.*

It is possible to say that the gas diffusion cathode of the present invention is similar to the cathode (130) of Tennakoon on which the electrode reaction proceeds. However, the electrode catalyst layer (132) of Tennakoon is not analogous to the presently claimed space filled with a particulate solid acid catalyst (which is not an electrochemical catalyst). This is because the presently claimed particulate solid catalyst can function as a chemical catalyst for promoting the chemical reaction of hydrogen peroxide with acetate ion to produce peracetic acid. Tennakoon

fails to disclose or suggest such a role for a solid acid catalyst. Further, Tennakoon fails to disclose or suggest a particulate solid acid catalyst filling a space between the gas cathode and the membrane, as required by the present claims.

Merk discloses a method of forming peracetic acid in situ, as needed, for a variety of applications, including decontamination of medical devices and treatment of food products, wherein hydrogen peroxide is generated in an electrolysis unit by reduction of oxygen in water and then reacted with an acetyl donor, such as acetyl salicylic acid, to form peracetic acid. *See*, col. 4, lines 33-40. An advantage of the claimed invention is that the storage and shipment of concentrated and hazardous sterilants or precursors is avoided.

The electrolysis unit (10, 210, 310) of Merk has an anode (16, 216,316) and a gas diffusion cathode (18, 218, 318). Air is fed to the cathode (18, 218) to generate hydrogen peroxide by electrolysis of oxygenated water. Further, a peracetic acid precursor, such as acetyl salicylic acid, reacts with the peroxide to form peracetic acid. An ion selective barrier (20, 220) separates the unit into two chambers, an anodic chamber (12, 212) and a cathodic chamber (14, 214). By selecting either a proton permeable membrane or an anion exchange membrane for the barrier, the peracetic acid may be formed in either an alkaline electrolyte in the cathodic chamber or in an acid electrolyte in the anode chamber, respectively. *See, Abstract.*

Tennakoon discloses a method whereby peracids are produced electrochemically at the cathode by (1) directly or indirectly supplying an organic acid to the cathode; (2) providing for proton flow across the PEM; and (3) supplying a source of oxygen gas to the gas diffusion cathode, wherein the gas diffusion cathode includes a gas diffusion layer and a catalyst layer. More particularly, electric current is passed through the anode and the gas diffusion cathode, which are separated by the PEM. Protonated organic acids or other peracid precursors that are

provided to the anode, or formed at the anode, pass through the PEM reacting with oxygen (or peroxides) in the cathodic catalyst layer to generate the peracid product through oxygen reduction.

One skilled in the art would not be motivated to modify the electrolytic cell of Merk to include the solid acid catalyst of Tennakoon, because doing so would render Merk incapable of operating as originally intended (i.e., two-chamber design permitting the option of forming peracetic in either an alkaline electrolyte in the cathodic chamber or in an acid electrolyte in the anode chamber). Thus, Merk and Tennakoon fail to render obvious the present claims.

Accordingly, withdrawal of the rejection is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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